

LOFMARK  
Appl. No. 09/768,217  
October 20, 2004

### REMARKS/ARGUMENTS

Reexamination of the captioned application is respectfully requested.

#### **A. SUMMARY OF THIS AMENDMENT**

By the current amendment, Applicant basically:

1. Thanks the Examiner for the allowance of claims 19-22.
2. Thanks the Examiner for the indication of allowable subject matter in claims 4-18 and 25-29.
3. Respectfully traverses all prior art rejections.

#### **B. PATENTABILITY OF THE CLAIMS**

Claims 1-3, 23 and 24 stand rejected under 35 USC 102(e) as being anticipated by U.S. Patent 6,477,249 to Williamson et al (see enumerated paragraph 1 of the Office Action). All prior art rejections are respectfully traversed.

Applicant's rejected independent claims concern a filter for filtering signals in a telecommunications system, which filter is passive and has a complex characteristic impedance which at least approximately matches a predetermined complex impedance. The filter comprises a resistance which is chosen such that it assists in giving the filter its said complex characteristic impedance.

Applicant reiterates that the resistance of Williamson's filters are not chosen such to provide the filter with said complex characteristic impedance. The Williamson filters clearly comprise inductors and capacitor, which are *reactive components* and give the filter a *resistive characteristic impedance*, not a complex characteristic impedance, which include a resistance or resistive element. The Williamson filter comprises a detector and a switching device. As stated in Williamson column 7, lines 47-50, "the detector and

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switching functions may be combined by using a device that varies in resistance, thereby performing a switching function, in response to some property of the telephony traffic."

In column 6, lines 1 - 9, Williamson points out that

Ideally the filter is perfectly matched with the transmission line and terminal equipment to which it is coupled, and therefore does not reflect power. A poor filter return loss causes echoes on the line, which can be distracting to a subscriber, and also causes a change in the sidetone level heard by a subscriber, i.e. the amount by which a person hears their own voice when involved in a telephone conversation.

Further, Williamson states that

"because the transmission line is not lossless at voice band frequencies, the characteristic impedance of transmission lines and terminal equipment is complex so that a good return loss the termination impedance needs to match this and thus also needs to be complex (see column 6, lines 31-35).

With Williamson's statements as quoted in the preceding paragraph in mind, note specifically the embodiments in Fig. 8-13 in Williamson:

- Fig. 10 shows current against voltage, and further shows the performance of the non-linear element (NLE) in the filter illustrated in Fig. 8. Above a certain threshold voltage the current increases sharply due to the fact that the resistance of the NLE decreases to zero and the NLE (transistor or thyristor) will operate in its fully conducting mode, and under the threshold voltage the current decreases to zero due to the fact that the resistance of the NLE will increase to infinity and the NLE will operate in its non-conducting mode, i.e. switch from conducting (on) to interruption (off). The effect of the NLE is that for low amplitude signals, such as speech, the NLE has a high resistance and therefore capacitor C2 is not active. With

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high amplitude signals, such as POTS loop-disconnecting signalling, the NLE has a low resistance and therefore the capacitor C2 is active and forms a part of the low-pass filter.

- Williamson Fig. 9A shows the equivalent circuit for the low-pass filter with low amplitude signals, with only inductor L and capacitor C1 in use.
- Fig. 9B shows the equivalent circuit for the low-pass filter with high amplitude signals, with inductor L and capacitors C1 and C2 in operation in parallel thus reducing the cut-off frequency of the filter.
- The embodiment showed in Williamson Fig. 11 illustrates a filter switching between a low-order filter and an high-order filter by means of the NLE, which will switch between low-resistance (i.e. the resistance is neglectable) and high-resistance (i.e. cut-off).
- In the Williamson embodiments of Figs. 12 and 13 respectively, a switch is used instead of a NLE. It is obvious that during speech (low amplitude signals), the Williamson filter does not involve the capacitor C2 (C1 in Fig. 13) because no current will flow through the capacitor C2 (C1 in Fig 13) due to the switching element, a switch or a NLE, is operated in its interruption state.
- In Williamson Fig. 9A, the equivalent circuit for the speech mode is illustrated and NO RESISTANCE is present.

Therefore, the Williamson filter does not have a complex characteristic impedance during speech mode, which is a very important difference in comparison to independent claim 1. Further, as stated above, if the termination impedance is not complex the

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impedance match is not good, resulting in that the return loss is poor causing echoes on the line which can be distracting to a subscriber. In Williamson Fig. 9B, the equivalent circuit for the signalling mode is illustrated and NO RESISTANCE is present in the circuit. If the resistance of the NLE had been important for accomplishing complex impedance, the equivalent circuits of Williamson Figs. 9A and 9B would have been provided with resistors. However, in the alternate circuits shown in Williamson Figs. 12 and 13, the NLE is replaced by a switch. Even though Williamson teaches the use of elements having resistance, it is not suggested by Williamson that the resistance is chosen for matching purpose of a complex characteristic impedance.

Thus, Applicant vigorously maintains that the rejected claims patentably differ from what is taught by Williamson et al., and that Williamson does not form any basis for denying patentability of Applicant's claims.

### C. MISCELLANEOUS

The Commissioner is authorized to charge the undersigned's deposit account #14-1140 in whatever amount is necessary for entry of these papers and the continued pendency of the captioned application, including but not limited to any additional claims fees, any extension of time fees, and an IDS fees.

Should the Examiner feel that an interview with the undersigned would Facilitate allowance of this application, the Examiner is encouraged to contact the undersigned.

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Respectfully submitted,

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